weight of at least 10 cps. at 25° C., the amount of the total of said agarose and said gum being from 0.2 to 10% by weight of the water, the amount of agarose being from 2 to 99% by weight of said total, and the amount of said gum being sufficient to form, in the absence of said agarose, a solution in said water having a viscosity of at least 10 cps at 25° C., and allowing the solution to cool to form a gel.

The following specific examples will serve to illustrate the invention more fully without acting as a limitation upon its scope.

EXAMPLES

Agarose was separated from commercially available agar by the procedure of Blethen et al. U.S. Pat. No. 3,281,409 dated Oct. 25, 1966. A solution was then prepared by heating 12.0 grams of the agarose in 600 ml. of water while stirring. To the solution, after cooling to 60° C., were added 200 g of water-swollen and drained beads of a cation exchange resin, QAE Sephadex (Pharmacia), and the mixture was stirred for one-half hour at 60° C., and filtered; to the solution were added 2 liters of 80% aqueous isopropanol at 45° C. to coagulate the purified agarose which was separated on a screen dried at 50° C., and ground in a hammer mill to pass a 20-mesh screen. A portion of the purified agarose was dissolved in water by heating to 90° C. to form a solution containing 1% agarose by weight, cooled to cause it to gel, and its electroendosmosis (−Mr) found to be 0.03. The gel strength of a gel containing 1% by weight of the purified agarose was determined to be approximately 950 g/cm^2.

There was dispersed in 500 ml of distilled water 5 g of locust bean gum (powder), and the mix was heated to 100° C. and boiled for 30 seconds; 10 g of filter aid (Hyflo Supercell) was added to the resulting solution and the mixture was filtered at a pressure of 10–20 psi through a preheated filter bomb equipped with a suitable felt pad filter cloth. After filtration was complete, the filter cake was washed with 75 ml of distilled water, and the combined filtrate and washing was coagulated by mixing with 2.5 volumes of 85% isopropanol. After draining on a screen, the coagulum was resuspended in 85% isopropanol, allowed to stand for 15 minutes; drained and dried by heating at 60° C. for 4–6 hours, then ground in a hammer mill to 20–40 mesh (yield about 3–3.5 g). This clarified locust bean gum was water-soluble, free from charged or ionic groups, stable against hydrolysis which forms charged groups, and free from hulls and other impurities which accept stain and interfere with staining and/or detection of proteins in the gel; an aqueous solution containing 0.3% by weight of the gum by itself displayed a viscosity greater than 10 cps at 25° C.

A blend was prepared by mixing together 70 parts by weight of the purified finely divided agarose prepared as described above and 30 parts by weight of the finely divided particles of clarified locust bean gum. The blend was readily dissolved in water by stirring 0.5 gram into 100 ml of water and heating to the boiling point or until thoroughly dissolved; the solution was then cooled to 56° C. and 2% by weight of ampholytes was added with stirring. The solution was cast in a suitable form and allowed to gel by cooling, then stored at 4° C. for at least one hour before use.

The gel so prepared was found to have no measurable electroendosmosis and a gel strength of 350 g/cm^2. A sample of protein solution applied to the surface of the gel in the usual manner was effectively subjected to isoelectric focusing.

Similar results were obtained when there was substituted for the locust bean gum a sample of guar gum in the same amount.

When polyvinyl alcohol and dextran are used in place of clarified locust bean gum at concentrations which produce a viscosity greater than 10 cps at 25° C. (i.e. about 2–10%), then similar results are obtained.

We claim:

1. A dry solid composition capable of forming an aqueous gel free from electroendosmosis and suitable for use as a medium for isoelectric focusing, said composition consisting essentially of a blend of purified agarose having an electroendosmosis value (−Mr) less than 0.10 in an amount from 2 to 99% by weight and a gum soluble in boiling water without gelling, said gum being free from hull fragments and other impurities interfering with staining, free from charged groups and stable against hydrolysis which forms charged groups, and soluble by itself in water to form a solution of gum having a viscosity at a concentration no greater than 10% by weight of at least 10 cps at 25° C., said gum being clarified locust bean gum, clarified guar gum, polyvinyl alcohol or dextran.

2. An aqueous gel free from electroendosmosis having a gel strength of at least 100 g/cm^2 and suitable for use as a medium for isoelectric focusing consisting essentially of a gelled solution in water of the composition claimed in claim **1**, the amount of said composition present being from 0.2 to 10% by weight of the water.

3. A composition as claimed in claim **1** in particulate form in which some particles consist of said purified agarose and the remaining particles consist of said gum.

4. A composition as claimed in claim **1** in which said agarose has an electroendosmosis value (−Mr) no greater than 0.05 and is present in an amount from 50 to 90% by weight.

5. A composition as claimed in claim **4** in particulate form in which some particles consist of said purified agarose and the remaining particles consist of said gum.

6. An aqueous gel free from electroendosmosis having a gel strength of at least 100 g/cm^2 and suitable for use as a medium for isoelectric focusing consisting essentially of a gelled solution in water of the composition claimed in claim **8**, the amount of said composition present being from 0.2 to 10% by weight of the water.

7. An aqueous gel as claimed in claim **6** in which the amount of said composition is from 0.2 to 2% by weight of the water.

8. The method of making an aqueous gel free from electroendosmosis which comprises dissolving in water at elevated temperature (1) purified agarose having an electroendosmosis (−Mr) value no greater than 0.10 and (2) a water-soluble gum free from hull fragments and other impurities interfering with staining, free from charged groups, and soluble by itself in boiling water without gelling to form a solution having a viscosity at a concentration no greater than 10% by weight of at least 10 cps at 25° C., said gum being clarified locust bean gum, clarified guar gum, polyvinyl alcohol or dextran, the amount of the total of said agarose and said gum being from 0.2 to 10% by weight of the water, the amount of agarose being from 2 to 99% by weight of said total, and the amount of said gum being sufficient to form, in the absence of said agarose, a solution in said water having a viscosity of at least 10 cps at 25° C., and allowing the solution to cool to form a gel.

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